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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/782,929	02/23/2004	Shinji Takeda	249205US8	7680
22850	7590	11/05/2007		
OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			EXAMINER KARIKARI, KWASI	
			ART UNIT	PAPER NUMBER
			2617	
			NOTIFICATION DATE	DELIVERY MODE
			11/05/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.		Applicant(s)	
	10/782,929		TAKEDA ET AL.	
	Examiner		Art Unit	
	Kwasi Karikari		2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 August 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-9, 11 and 14-24 is/are rejected.
- 7) ☒ Claim(s) 10, 12 and 13 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>09/04/2007 and 08/17/2007</u> . | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 08/17/2007 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

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Claims 1,3-9,11 and 14-24 are rejected under U.S.C. 103(a) as being unpatentable over Hulyalkar et al., (U.S 6,751,196), (hereinafter Hulyalkar) in view of Achour et al., (U.S 20030210664 A1) (hereinafter Achour).

Regarding claims 1,3, 9 and 19, Hulyalkar discloses a multi-hop communication system configured by a radio control station (= central controller; and controller could be any station, see col. 2, line 66- col. 3, line 25) connected to a core network and a plurality of radio stations for relaying signals therebetween (= exchange of information in an adhoc wireless ATM system, see col. 2, lines 56-65), wherein, the radio control station comprises:

a control signal (= control plane) transmission/reception unit configured to transmit/receive a control signal and an information signal (= wireless user plane) and for conducting communication with the plurality of radio stations (= centralized controller transmits beacon signal, see col. 2, line 66- col. 3, line 25 and Fig. 2a); and

an information signal transmission/reception unit configured to transmit/receive the information signal; (= controller operates the control and user communication planes, see col. 3, lines 40-60);

a communication route determiner configured to determine a communication route through the multi-hop communication system for the control signal independently from a communication route through the multi-hop communication system for the information signal prior to conducting communication with the plurality of radio stations (= slot allocation, see col. 3, lines 9-25, lines 38-60; and col. 4, lines 20-30), and

the radio station (= station) comprises:

a control signal transmission/reception unit configured to transmit/receive the control signal (= communication between controller and station using control plane, see Fig. 2a and 2b); and

an information signal transmission/reception unit configured to transmit/receive the information signal (= communication between controller and station using wireless user plane, see Fig. 2a and 2b); but fails to mention that the control signal have a lower bit rate than an information signal, i.e., control and information signals operate on different bit rates.

However, Achour teaches a supplemental channel scheduling; and also mentions a high rate and low rate link packet data channel and link packet control channel respective (see Pars. 0003, 0016-17 and 0024).

It would therefore have been obvious to one of the ordinary skill in the art to combine the teaching of Achour with the system of Hulyalkar for the benefit of achieving a system that provide for scheduling and link transmission on low rate mobile station in channel for timely manner (see Par. 0003)

Regarding claim 4, as recite in claim 3, Hulyalkar discloses the radio control station, the communication route determiner determines a communication route through the multi-hop communication system for the information signal by a different independent process from the determination of the communication route through the multi-hop communication system for the control signal (= location of time slot for communication;

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and the usage of independent control and user link, see col. 3, lines 9-25, 38-60, col. 4, lines 11-16 and Figs. 2a and 2b).

Regarding claim 5, as recite in claim 3, Hulyalkar discloses the radio control station, the communication route determiner transmits a communication route acquisition request to the radio station for acquisition of a communication route, and the communication route determiner determines a communication route based on a response to the communication route acquisition request transmitted by the radio station (= transmission request and the allocation of slot, see col. 3, lines 9-25 and col. 4, lines 1-40).

Regarding claim 6, as recite in claim 3, Hulyalkar discloses that the radio control station, further comprising: a communication channel controller configured to transmit a usage notification that indicates usage of a communication channel handled by the radio control station (see col. 3, lines 26-37, col. 4, line 4- col. 5, line 5, col. 5, lines 38-65; and col. 6, lines 31-45).

Regarding claim 7, as recite in claim 3, Hulyalkar discloses the radio control station, the communication route determiner determines a communication route to the radio station and transmits a communication route determination notification that notifies the communication route to a radio station located on the communication route (allocation

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of slot, see col. 3, lines 9-25 and col. 4, lines 1-40).

Regarding claim 8, as recite in claim 7, Hulyalkar discloses the radio control station, the communication route determiner assigns a communication channel to be used in the radio station located on the determined communication route (see col. 3, lines 9-25).

Regarding claim 11, as recite in claim 9, Hulyalkar discloses that the radio station further comprising: a decision unit configured to decide whether or not communication is directly conducted with the radio control station based on a reception level of the control signal received by the control signal transmission/reception unit (see col. 5, lines 53-65).

Regarding claim 13, as recite in claim 9, Hulyalkar discloses that the radio station, further comprising: a first relay controller configured to transmit a relay control signal to other station for requesting a relay of the information signal and to set a communication route to the radio control station via the other station according to a response relay control signal that is a response to the relay control signal (= transmission request and the allocation of slot, see col. 3, lines 9-25 and col. 4, lines 1-40).

Regarding claim 14, as recite in claim 13, Hulyalkar discloses that the radio station, further comprising: a communication route selector configured to select a radio station satisfying a prescribed condition regarding a communication state if a plurality of the other radio station transmitted the response relay control signal (= transmission request

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and the allocation of slot, see col. 3, lines 9-25 and col. 4, lines 1-40).

Regarding claim 15, as recite in claim 9, Hulyalkar discloses that the radio station, further comprising: a second relay controller configured to receive a relay control signal requesting a relay of the information signal from other station, to transmit a response relay control signal that is a response to the relay control signal and to set a communication route from the other radio station to the radio control station (= transmission request and the allocation of slot, see col. 3, lines 9-25 and col. 4, lines 1-40, col. 5, lines 38-65; and col. 6, lines 31-45).

Regarding claim 16, as recite in claim 15, Hulyalkar discloses that the radio station, the second relay controller transmits the response relay control signal notifying ability of the relay of the information signal based on a reception level of the received response relay control signal (see col. 3, lines 9-25 and col. 4, lines 1-40, col. 5, lines 38-65; and col. 6, lines 31-45).

Regarding claim 18, as recite in claim 14, Hulyalkar discloses the radio station, wherein an information indicating an interference level is included in the response relay control signal, and the communication route selector selects a radio station based the interference level included in the response relay control signal (see col. 3, lines 9-25 and col. 4, lines 1-40, col. 5, lines 38-65; and col. 6, lines 31-45).

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Regarding claim 20, as recite in claim 1, Hulyalkar discloses the multi-hop communication system according to claim 1, the communication route determiner determines whether or not the communication route for the information signal can be set based on a reception level of the control signal (see col. 3, lines 9-25 and col. 4, lines 1-40, col. 5, lines 38-65; and col. 6, lines 31-45).

Regarding claim 21, as recite in claim 3, Hulyalkar discloses that the radio control station, the communication route determiner determines whether or not the communication route for the information signal can be set based on a reception level of the control signal (see col. 3, lines 9-25, lines 38-60; and col. 4, lines 20-30),

Regarding claim 22, as recite in claim 19, Hulyalkar discloses the multi-hop communication method according to claim 19, in the determining step, whether or not the communication route for the information signal can be set is determined based on a reception level of the control signal (see col. 3, lines 9-25, lines 38-60; and col. 4, lines 20-30),

Regarding claim 23, as recite in claim 3, Hulyalkar discloses the radio control station, wherein the communication route determiner is configured to determine the communication route, wherein the determined communication route includes at least one radio station (see col. 3, lines 9-25, lines 38-60; and col. 4, lines 20-30),

Regarding claim 24, as recite in claim 3, Hulyalkar discloses the radio control station, wherein the communication route determiner is configured to determine the communication route as a list of stations, the determination of the communication route being independent of an allocation of dedicated physical data channels used for communication between the stations (see col. 2, line 66- col. 3, line 25, col. 3, lines 40-60; and Fig. 2a).

Allowable Subject Matter

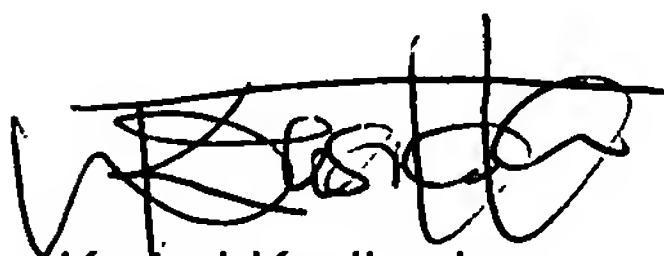
3. Claims 10,12 and 13 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion


4. **Examiner's Note:** Examiner has cited particular columns and line numbers in the references applied to the claims above for the convenience of the applicant. Although the specified citations are representative of the teachings of the art and are applied to specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested from the applicant in preparing responses, to fully consider the references in entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the Examiner.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kwasi Karikari whose telephone number is 571-272-8566. The examiner can normally be reached on M-F (8 am - 4pm). If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rafael Pérez-Gutiérrez can be reached on 571-272-7915. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8566. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



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10/29/2007



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